

*Final Evaluation Findings for the Jobos Bay National Estuarine Research Reserve  
March 1998 – November 2001*



Office of Ocean and Coastal Resource Management  
National Ocean Service  
National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

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## EXECUTIVE SUMMARY

### A. OVERVIEW

Sections 312 and 315 of the Coastal Zone Management Act (CZMA) of 1972, as amended, require the National Oceanic and Atmospheric Administration (NOAA) to conduct periodic evaluations of federally designated National Estuarine Research Reserves (NERRs). This review examined the operation and management of the Jobos Bay National Estuarine Research Reserve (JBNERR) by the Commonwealth of Puerto Rico during the period of March 1998 through November 2001.

The fundamental conclusion of this evaluation is that JBNERR is not fully adhering to its programmatic obligations as defined by the approved final revised management plan, the terms of federal financial assistance awards and NERR System Regulations under Section 315 of the CZMA. This document contains 12 recommendations, six of which are mandatory. Two types of recommendations are made: (1) **Necessary Actions** address programmatic requirements and *must* be implemented by the indicated date; and (2) **Program Suggestions** describe actions that NOAA believes the commonwealth should take to improve the program but are not currently mandatory. Program Suggestions that are reiterated in consecutive evaluations due to continuing problems subsequently may be elevated to Necessary Actions. If no dates are indicated, the commonwealth is expected to address the recommendations by the time of the next Section 312 program review.

### B. EVALUATION SUMMARY

NOAA highly commends JBNERR and the Puerto Rico Department of Natural and Environmental Resources (DNER) for stabilizing the reserve's staffing, developing key infrastructure, and implementing core programs. However, JBNERR is experiencing significant resource degradation that threatens the health of this nationally recognized estuary. Illegal activities occurring within and adjacent to the reserve are compromising Puerto Rico's natural heritage. DNER needs to demonstrate the necessary leadership to ensure a stable environment for research and education through long-term protection of JBNERR resources. In order to maintain JBNERR's designation, it is the commonwealth's responsibility to protect the natural and cultural resources of the reserve and to enforce the provisions of commonwealth law, especially the laws and regulations of DNER and the Puerto Rico Coastal Management Program. NOAA has a longstanding programmatic interest, statutory responsibility, and financial commitment to DNER to protect JBNERR from any adverse activities within or outside reserve boundaries that jeopardize the ecological integrity of the area. Accordingly, NOAA offers whatever assistance DNER requires to resolve JBNERR resource management issues.

## I. INTRODUCTION

The Coastal Zone Management Act (CZMA) of 1972, as amended, established the National Estuarine Research Reserve System. Sections 312 and 315 of the CZMA of 1972, as amended, require the National Oceanic and Atmospheric Administration (NOAA) to conduct periodic performance reviews of federally designated National Estuarine Research Reserves. This document describes the evaluation findings of the Director of NOAA's Office of Ocean and Coastal Resource Management with respect to the operation and management of the Jobos Bay National Estuarine Research Reserve (JBNERR) by the Commonwealth of Puerto Rico during the period of March 1998 through November 2001. This document includes an evaluation summary, program review procedures, a program description, accomplishments, recommendations and a conclusion.

The recommendations made by this evaluation appear in **boxes** and follow the relevant section of findings. Two types of recommendations are made: (1) **Necessary Actions** address programmatic requirements and *must* be implemented by the indicated date; and (2) **Program Suggestions** describe actions that NOAA believes the commonwealth should take to improve the program but are not currently mandatory. Program Suggestions that are reiterated in consecutive evaluations due to continuing problems subsequently may be elevated to Necessary Actions. If no dates are indicated, the commonwealth is expected to address the recommendations by the time of the next Section 312 program review. NOAA will consider the findings made by this evaluation when making future financial award decisions regarding JBNERR.

## **II. PROGRAM REVIEW PROCEDURES**

### **A. OVERVIEW**

NOAA began its review of JBNERR in October 2001. The Section 312 evaluation process involves four distinct components:

- An initial document review and identification of specific issues of particular concern;
- A site visit to JBNERR including interviews and a public meeting;
- Development of draft evaluation findings; and
- Preparation of the final evaluation findings, partly based on comments from the commonwealth regarding the content and timetables of necessary actions specified in the draft document.

### **B. DOCUMENT REVIEW AND ISSUE DEVELOPMENT**

The evaluation team reviewed a wide variety of documents prior to the site visit, including: (1) the federally-approved Environmental Impact Statement and JBNERR Management Plan; (2) financial assistance awards and work products; (3) quarterly and annual performance reports; (4) official NOAA correspondence; (5) research and education grant proposals; and (5) relevant publications on natural resource management issues in the Caribbean.

Based on this review and on discussions with the Office of Ocean and Coastal Resource Management's (OCRM) Estuarine Reserves Division, the evaluation team identified the following priority issues:

- The manner in which recent changes in commonwealth government may affect JBNERR;
- The manner in which JBNERR coordinates with other federal, commonwealth, and local agencies and programs;
- The status of reserve facilities, staffing, and participation in national research, monitoring, and education programs;
- The status of encroachment on reserve property, including a requested injunction against any construction on JBNERR land or in mangrove areas in or adjacent to JBNERR;
- The status of boundary issues and surveillance in JBNERR;

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- The status of actions necessary to fulfill EPA's consent order regarding the activities of Lippy Brothers, Incorporated on Hacienda Aguirre;
- JBNERR coordination efforts with the Puerto Rico Coastal Management Program;
- The manner in which JBNERR has addressed the recommendations contained in the previous Section 312 evaluation findings released in 1998.

### **C. SITE VISIT TO PUERTO RICO**

Notification of the scheduled evaluation was sent to the Puerto Rico Department of Natural and Environmental Resources (DNER), JBNERR, relevant federal environmental agencies and regional newspapers. In addition, a notice of NOAA's "Intent to Evaluate" was published in the *Federal Register* on September 20, 2001.

The site visit to Puerto Rico was conducted on December 10-14, 2001. Ms. Rosemarie McKeeby, Evaluation Team Leader, OCRM Director's Office; Ms. Nathalie Peter, JBNERR Program Specialist, OCRM Estuarine Reserves Division; and Mr. Michael Graybill, Manager, South Slough NERR composed the evaluation team.

During the site visit, the evaluation team interviewed JBNERR staff, senior DNER and other commonwealth officials, federal agency representatives, coastal researchers, environmental educators, civic group representatives and private citizens. Appendix A lists people and institutions contacted during this review.

As required by the CZMA, NOAA held an advertised public meeting on December 11, 2001, at 4:00 p.m., at the Jobos Bay Reserve Visitors' Center, Road 705, Kilometer 2.3, Main Street, Aguirre, Puerto Rico. The public meeting gave members of the general public the opportunity to express their opinions about the overall operation and management of JBNERR. Appendix C lists individuals who registered at the meeting. NOAA's response to written comments submitted during this review is summarized in Appendix D.

The crucial support of JBNERR staff with the logistics and planning of the site visit is gratefully acknowledged.

### **III. RESERVE PROGRAM DESCRIPTION**

#### **A. THE NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM**

The Coastal Zone Management Act of 1972, as amended, established a system of National Estuarine Research Reserves that are funded cooperatively by NOAA's Office of Ocean and Coastal Resource Management and the host states or territories, which also manage the reserves. The Reserve Program has two primary missions: (1) to establish and maintain, through federal and state cooperation, a national system of reserves representative of various biogeographic regions in the U.S.; and (2) to conduct long-term research, educational and interpretive activities in support of national coastal zone management priorities.

Toward those missions, reserve sites are selected to represent the range of biogeographic regions, estuarine types and coastal management challenges occurring throughout the U.S. To date, NOAA has designated 25 National Estuarine Research Reserves that collectively protect more than one million acres of estuarine land and water. Three additional sites are currently in various stages of the designation process.

#### **B. THE JOBOS BAY NATIONAL ESTUARINE RESEARCH RESERVE**

##### **1. Reserve Site Description**

JBNERR is located within the municipalities of Guayama and Salinas on the southern coast of Puerto Rico. The reserve comprises approximately 2,800 acres of coastal wetland and subtidal habitats representative of the West Indian biogeographic region. Three coastal habitats of particular ecological and economic significance are found within JBNERR boundaries: (1) mangrove forests, (2) seagrass beds, and (3) coral reefs. These habitats form one of the most complex, diverse, and productive coastal associations in the world, and therefore represent a valuable opportunity for environmental research and education. Each habitat contains unique natural resources, faces different environmental threats, and requires specific management measures to ensure long-term ecological integrity. Brief summaries of major features and environmental threats of each habitat follow.

##### **a. Mangrove Forests**

Dense stands of mangroves occur along the mainland shoreline of the reserve, as well as on the Cayos Caribe islands. Mangroves act as sediment traps that slow water movement and trap suspended materials, gradually raising the land level and producing organic soil. The rich protected substrate provides habitat for a great variety of organisms that serve as food for other marine organisms. Some of the finfish and shellfish found in mangrove ecosystems have significant commercial value. Mangroves also provide nesting sites for native and migratory birds.



JBNERR mangrove stands have undergone several historical cycles of stress and recovery, which suggests that they are under chronic environmental strain. Direct threats to mangrove forests long-term health include: (1) continuing pollution of back-bay areas by untreated sewage from the Mar Negro area; (2) long-term historical impacts of industrial dumping and discharge into Mar Negro; (3) illegal dredge and fill operations during unpermitted construction and agricultural activities; (4) occasional tree cutting for firewood or lumber; and (5) air pollution emanating from the Aguirre Thermoelectric Power Plant.

**b. Seagrass Beds**

Seagrass bed communities dominate many of the shallow areas of JBNERR. Seagrass beds serve as habitat as well as feeding and nursery grounds for a wide variety of marine organisms, including conch, octopus, squid, shrimp and juvenile lobster. Many of these organisms, particularly conch, octopus, and lobster have significant commercial value. The grunt depends entirely on seagrass beds for food. The endangered hawksbill sea turtle, the green sea turtle, and the West Indian manatee have been observed in the reserve's seagrass beds.

The range and abundance of JBNERR seagrass beds have markedly declined over time. Direct threats to seagrass bed communities include: (1) excessive sedimentation from terrestrial runoff, navigation channel dredging, and sediment resuspension due to vessel traffic; (2) thermal stress from the Aguirre Thermoelectric Power Plant heated effluent that is discharged directly into JBNERR waters; (3) overexploitation of fisheries by local fishermen; and (4) anchor and prop damage from boats.

**c. Coral Reefs**

Jobos Bay is the only reserve in the national system that contains a representative example of an offshore Caribbean coral reef. The corals at JBNERR display the typical zonation of Caribbean reefs. Finger corals, gorgonians, zoanthids, and seagrass beds characterize the scoured channels between the Cayos Caribe islands. Like many reef communities found in southern Puerto Rico, communities located off the Cayos Caribe islands are characterized by relatively low diversity and abundance and tend to be dominated by massive scleractinian corals, gorgonian octocorals and algae.

The shallow reefs of JBNERR reveal the combined historical effects of: (1) major hurricanes; (2) chronic natural and anthropogenic sedimentation stress; (3) near extinction of the spiny sea urchin throughout the Caribbean and attendant overgrowth of low-lying corals by benthic algae suddenly freed from constant grazing pressure; (4) coral diseases and bleaching events; and (5) overfishing of finfish and shellfish.

**2. Reserve Administration**

NOAA designated JBNERR in 1981, and the Puerto Rico DNER is responsible for the operation and management of the reserve. Pursuant to Reorganization Plan Number

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Four, enacted by the Puerto Rico Legislative Assembly in 1993, the former Department of Natural Resources (DNR) was reorganized into a new umbrella agency (DNER) charged with the administration of Puerto Rico's natural resources, solid waste management, energy policy, and mining operations. Under the reorganized administrative framework, all of the operational and natural resource management responsibilities of the old DNR were transferred and delegated to the newly created Natural Resources Administration (NRA) under DNER.

The Bureau of Sanctuaries and Natural Reserves within DNR's Forest Service had conducted daily management of JBNERR. In response to several of NOAA's recommendations, daily management responsibility was transferred to the DNER Bureau of Coasts, Reserves and Refuges through an Administrative Order issued by the DNER Secretary.

#### **IV. ACCOMPLISHMENTS, REVIEW FINDINGS AND RECOMMENDATIONS**

##### **A. OPERATIONS AND MANAGEMENT**

###### **1. Administration**

###### **a. Position**

The reserve is well positioned in the organizational structure of DNER to accomplish its mission. Within DNER, JBNERR is located in the Natural Resources Administration's Bureau of Coasts, Reserves and Refuges. The Reserve Manager serves as the Marine and Estuarine Sanctuaries Division Chief in the Bureau. NOAA encourages DNER to maintain the reserve's position in the current organizational structure of the Department.

###### **b. Staffing**

The reserve has filled key staff positions including a research assistant, an education assistant, a biologist, maintenance staff and a boat mechanic and operator. The additional staff has greatly contributed to the stabilization and institutionalization of JBNERR and its key programs. Furthermore, the Reserve Manager is recognized by many individuals both within and outside DNER as extremely dedicated and effective. The Reserve Manager and staff are doing an excellent job in furthering the goals of the reserve.

In previous years, JBNERR's Education Coordinator position was supported with commonwealth coastal management program funds designated for a Regional Educator. With the death of the reserve's Education Coordinator during the spring of 2001, the coastal management program Regional Educator position became vacant. The coastal management program was reluctant to fund a new Education Coordinator for the reserve, because the education needs of the commonwealth coastal management program and the reserve are quite different. Therefore, JBNERR will request DNER approval for a new position at the beginning of the commonwealth fiscal year in July 2002. Funds for the Education Coordinator position are allocated in the reserve's FY 02 operations award.

**1. NECESSARY ACTION:** Within six months of receipt of the final evaluation findings, DNER must fill the position of Education Coordinator with a competent, qualified individual. Progress on filling the Education Coordinator position shall be reported in JBNERR's operations awards semi-annual progress reports.

Currently, JBNERR does not have the ability to tailor position descriptions to fulfill the unique requirements of the reserve. Additionally, the Reserve Manager does not participate on the committee that makes final hiring decisions regarding reserve staff. As a field site and an evolving NERRS program, JBNERR's staffing needs differ from those of other DNER programs and offices. Therefore, the reserve requires a measure of flexibility to address staffing needs in a manner that ensures the ability to effectively manage the evolution of the reserve and its activities.

**2. PROGRAM SUGGESTION:** NOAA encourages DNER to establish job descriptions and a recruitment process to address the unique staffing needs of the reserve. NOAA also encourages DNER to include the Reserve Manager in all final hiring decisions regarding reserve staff.

c. Finance

During the 1998-2001 evaluation period, grants were awarded under the categories of construction, operations, education and monitoring, acquisition, and annual meeting. The reserve achieved the desired results from the funded tasks and has built upon established projects. NOAA encourages JBNERR to continue this excellent progress.

Quarterly or biannual performance reports as well as a final report are required for each financial assistance award. During the evaluation period, performance reports were submitted on schedule and provided necessary information. Performance reports are highly useful both to NOAA and to JBNERR because they provide a consolidated source of information on successes and accomplishments related to financial assistance awards. NOAA encourages JBNERR to continue submitting timely and informative performance reports.

DNER financial management and coordination with JBNERR has improved, particularly in the areas of accounting and purchasing. DNER is also improving the timeliness of its payments. NOAA encourages DNER to continue improving financial coordination with the reserve.

While DNER has consistently provided financial support to match reserve operations and construction awards during the evaluation period, concern was raised during the site visit that DNER might not be able to secure the required match for JBNERR's FY 01 acquisition award. The reserve's FY 01 acquisition plan identifies five sectors: the mangrove forest behind the Visitors' Center, Cayos La Barca, a salt flat on the western boundary of the reserve, an upland forest area on the northern boundary between reserve and agricultural land, and a mangrove corridor along Mar Negro. Of the five sectors, the Puerto Rico Land Authority agreed to transfer the upland forest to the reserve as a compensation site per an Environmental Protection Agency Consent Order. The 15-acre salt flat belongs to the Puerto Rico Housing Department. A surveying map for the area was prepared through mutual agreement between the Housing Department and DNER. Appraisal will continue, potentially resulting in a land transfer between the two agencies.

Of the remaining sectors, the mangrove area behind the Visitors' Center and Cayos La Barca retain the highest priority as a result of increasing development pressures in the area. The lot behind the Visitors' Center would provide the only direct access to Jobos Bay for the reserve. DNER provided funds for the title study, land survey, boundary map completion, and appraisal study for the mangrove lot behind the Visitors' Center. DNER also authorized and identified matching funds to complete the mangrove lot acquisition and to proceed with Cayos La Barca. However, some confusion regarding the matching funds occurred subsequent to a change in DNER Administration in the autumn of 2001.

The evaluation team discussed the issues surrounding the acquisition matching funds with Secretary Salas, who identified the necessary commonwealth resources following the site visit. NOAA commends Secretary Salas for resolving this issue, and encourages DNER to continue its progress on the JBNERR acquisition process.

The reserve currently lacks small purchases capability. The reserve does not have a department credit card, petty cash fund, or credit accounts with vendors, and DNER will not prepare a purchase order for an amount less than \$50 dollars. Therefore, many of the reserve's small purchases become out-of-pocket expenses for the Reserve Manager.

**3. PROGRAM SUGGESTION:** NOAA encourages DNER to develop a small purchases capability, such as a department credit card or petty cash fund, for JBNERR.

d. Advisory Committees

JBNERR is fortunate to have three outstanding advisory committees: a Citizens Advisory Committee (CAC), a Research Advisory Committee (RAC), and an Education Advisory Committee (EAC). The Citizens Advisory Committee was created to guarantee diverse and effective public participation in matters related to the operation and management of the reserve. The CAC assists the Reserve Manager in seeking support for education programs and in fostering community involvement in reserve activities.

The RAC provides the following services to the reserve:

- Review and comment on priorities for research and monitoring projects;
- Review and comment on research proposals and reports;
- Assistance in developing standard requirements for proposals, protocols, and findings;
- Advice on local issues affecting the integrity of the estuarine ecosystem; and
- Advice on opportunities for developing cooperative research and monitoring agreements.

The EAC also provides services to the reserve:

- Advice on opportunities for developing partnerships and cooperative agreements for education and training programs;
- Review and comment on priorities for education and interpretive activities;
- Review and comment on proposals for curriculum development, videos, and other media materials about the reserve;
- Advice on the design of exhibits and interpretive facilities;
- Assistance in planning and implementation of seminars and outreach activities; and
- Promotion of interagency and inter-organization communication and information exchange between the reserve and other groups.

Each of the three committees is comprised of diverse and dedicated individuals that have done an excellent job assisting the reserve in furthering its mission and increasing its visibility. NOAA commends JBNERR for establishing these three key advisory committees and encourages the reserve to assist the committees' move toward institutionalization.

**4. PROGRAM SUGGESTION:** NOAA encourages JBNERR to work with its advisory committees in order to assist their move into a more institutionalized stage of development, including: (1) formalization and empowerment of the committees; (2) integration of committee members' activities; and (3) development of the committees' capacity to advise the reserve as a group and to serve as an advocate for the reserve.

## **2. Facilities**

The reserve has significantly enhanced its facilities during the evaluation period. Several of these enhancements have been made to the Visitors' Center, which houses laboratory facilities, an information and resource library, exhibits, a theater/conference room, and administrative offices. A 2,800 square foot space in the Visitors' Center has been devoted to interpretive exhibits. The exhibits include interactive displays, photos, a watershed model that demonstrates the reserve's habitat types, and a diorama of the offshore coral reef system. Pictorial exhibits provide overviews of the reserve's key ecosystems, resources, and the cultural history of Aguirre. Additionally, a multimedia computer demonstration has been fully incorporated into the exhibits. The interactive interpretive display allows visitors to obtain information about the National Estuarine Research Reserve System and about individual reserves. The display contains detailed information, available in both English and Spanish, about JBNERR's resources, habitats and activities. Other enhancements include construction of the theater/conference room in the Visitors' Center and storage, kitchen and dormitory facilities with capacity for sixteen individuals adjacent to the Visitors' Center.

The reserve also has improved its facilities through completion of interpretive trails and several public access areas. Two nature trails (Native Trees Trail and Jayegues Bird Trail) and one kayak trail allow visitors primary contact with the reserve's natural resources. All three trails are complemented with excellent interpretive signs.

The reserve has completed a dock construction project at Cayo Caribe, which is the largest island of the Cayos Caribe system. The system consists of red mangrove islands surrounded by seagrass beds and bordered on the south by coral reefs. The public uses Cayo Caribe as a picnic and camping area. Unfortunately, the shoreline has been adversely affected by several sources of erosion, including boats landing on the mangrove roots. To mitigate this problem, the reserve constructed a pier and installed mooring buoys, which both facilitate public access to the island and provide an alternative landing area for local boats. The pier was constructed using a sustainable design that greatly improves the pier's ability to withstand severe weather.

The enhancements to the reserve's facilities during the review period are very impressive. They clearly are the result of innovative thinking and a great deal of hard work. These key additions have significantly contributed to the institutionalization and visibility of the reserve's programs, and NOAA encourages the reserve to continue its excellent facilities enhancement as opportunities arise.

### **3. Management Plan**

NOAA applauds JBNERR for completion of its revised management plan. The new plan is the first revision of the document since the original was approved in 1983 and represents a blueprint for the future. It outlines the reserve's authorities and policies as well as its long-term goals and objectives. The plan addresses the reserve's research and monitoring program; education and interpretation program; facilities plan; land acquisition plan; habitat protection, alteration, and restoration; and surveillance and enforcement. Significantly, the plan introduces zoning, yet provides for multiple compatible uses. The revised management plan was approved by the Puerto Rico Planning Board and signed by the Governor, creating an enforceable document. In addition to being the only natural reserve management plan in Puerto Rico that has been approved by the Planning Board, JBNERR's management plan is also the only one with a work plan. The reserve translated the management plan into Spanish, published it in CD-ROM format, and distributed 300 copies. Local universities use the management plan for teaching purposes. NOAA is extremely impressed with the dedication and effort that went into revising the management plan and the resultant high quality of the final document.

### **4. Visibility**

NOAA commends JBNERR for its efforts to improve visibility and encourages continuation of these efforts. New facilities, staff, and research projects have increased JBNERR's public visibility during the review period. The reserve's facilities, programs, and management have also increased its visibility among DNER leadership. New nature trails provide direct public access to Jobos Bay's resources, and JBNERR has made significant progress in its ecotourism outreach efforts. The reserve has received increased news coverage and was the subject of a recent television documentary.

In 2001, JBNERR conducted a community survey that revealed that the majority of the surrounding community recognizes the reserve as part of DNER but does not fully understand its purpose. The survey also indicated that the community is faced with a number of difficult social and economic problems that are tied to the environment. During the site visit, one participant at the public meeting expressed the opinion that the public would likely have a different attitude toward resource degradation in the watershed if it had a better understanding of the major issues. The reserve can play a key role in assisting the community in understanding and addressing social, economic, and environmental issues in the Jobos Bay watershed. NOAA encourages JBNERR to continue working with the local community to increase understanding of significant environmental issues in the watershed and their connections to social and economic

issues. NOAA also encourages JBNERR to continue working with the local community to assist their understanding of the reserve's role in the watershed.

## **5. Commonwealth Program Coordination**

### **a. Puerto Rico Coastal Management Program**

NOAA commends the high level of collaboration between JBNERR and the Puerto Rico Coastal Management Program. The two programs have realized the value of working together and sharing funding and information. JBNERR and the Puerto Rico Coastal Management Program regularly engage in mutually beneficial projects, such as the Better Assessment Science Integrating Point and Nonpoint Source Program for the Jobos Bay watershed, a U.S. Geological Survey hydrology study of the watershed, and Nonpoint Source Pollution Interagency Committee activities in the watershed. For example, the transfer of JBNERR's nitrate program research findings to the Nonpoint Source Pollution Interagency Committee resulted in a ban on raw sewage application to agricultural fields. NOAA largely attributes the degree of collaboration between the two programs to the Bureau of Coasts, Reserves, and Refuges Director, who has encouraged and facilitated ongoing communication and cooperation between the programs. NOAA encourages the Puerto Rico Coastal Management Program to continue using the reserve for pilot studies, and NOAA also encourages JBNERR to continue providing the coastal management program with research findings and training opportunities that support decision-making.

### **b. Sea Grant**

NOAA is impressed with the collaboration between DNER and Sea Grant. A Memorandum of Understanding (MOU) between the department and the program has resulted in many cooperative efforts, such as outreach material design, editing, and printing. For example, the University of Puerto Rico Sea Grant Program assists with "Bahia de Jobos," a regular newsletter that describes JBNERR's activities and programs and receives wide distribution. The MOU simplifies financial arrangements between DNER and Sea Grant and provides an excellent framework for coordination on the Coastal Training Program, which will serve as an important catalyst for future collaboration. NOAA encourages DNER and Sea Grant to continue their innovative collaborative efforts.

## **6. National Program Coordination**

### **a. 2001 National Estuarine Research Reserve System Annual Meeting**

In October 2001, JBNERR hosted the National Estuarine Research Reserve System annual meeting. The annual meeting provides a forum for Reserve System managers, education coordinators, and research coordinators as well as NOAA staff to discuss national initiatives and review the system's strategic planning efforts. JBNERR coordinated all logistics for the six-day conference as well as optional field trips held prior to the meeting. NOAA acknowledges the critical support of JBNERR staff with the



logistics and planning of the annual meeting and congratulates the reserve on hosting a successful conference.

**b. Coral Reef Initiative**

The Reserve Manager represented Puerto Rico on the Coral Reef Initiative Task Force early in the evaluation period. Coral Reef Initiative projects in Puerto Rico include: (1) baseline characterizations for a number of sites, including Vieques; (2) land use change analysis for the southwest coast of Puerto Rico; (3) coral reef laws and guidelines for regulations; (4) identification of hot spots and installation of buoys and signs; (5) development of an information synthesis and data management center; (6) establishment of a permanent monitoring program; (7) evaluation of fish communities recovery in the Culebra Marine Reserve; and (8) workshops on human impact monitoring protocols. The reserve and the coastal management program jointly developed a coral reef conservation plan draft outline. Throughout the evaluation period, the Reserve Manager continued to support the development and implementation of the Puerto Rico Coral Reef Strategy and Action Plan. NOAA commends the reserve for its excellent work to conserve Puerto Rico's coral reefs.

**c. Bilingual Contributions**

During the evaluation period, the reserve has made a great contribution to the national program through bilingual materials. For example, JBNERR created an Estuaries Day video segment in Spanish. The reserve also produced a Spanish translation of the "Twenty Things You Can Do For Your Estuary" fact sheet. The reserve has received requests for the Spanish version of its management plan from Central and South America. Clearly, there are significant opportunities for the reserve to provide information about estuaries in general and JBNERR in particular to a Spanish-speaking audience. NOAA is impressed with the reserve's bilingual contributions to the national program and encourages JBNERR to expand its role in reaching Spanish-speaking audiences to the greatest extent practicable.

**B. RESEARCH AND MONITORING**

**1. Ties with Universities**

The reserve's research and monitoring program has strengthened ties with universities. A number of commonwealth universities and agencies conducted fifteen research projects at the reserve during the evaluation period. Examples include Cayo Caribe restoration research, student biodiversity inventories, and socioeconomic research on health issues in the Jobos Bay watershed. The high caliber research that has been conducted at the reserve has provided baseline data necessary for effective resource management. Additionally, the research has addressed JBNERR management plan priorities as well as national priorities. NOAA applauds the reserve for its efforts to strengthen ties with universities and encourages it to continue.

## **2. Funding Collaboration**

Rather than focusing on writing grant proposals, JBNERR has attracted cost-share funds by working with the University of Puerto Rico, the Puerto Rico Coastal Management Program and the Nonpoint Source Pollution Interagency Committee. The reserve also regularly provides logistical support to principal investigators that have funding and want to use the reserve as a research site. NOAA encourages JBNERR to continue pursuing innovative funding approaches that best meet the unique needs of the reserve.

## **3. Research and Monitoring Program Visibility**

The reserve's research and monitoring program has worked to increase program visibility and to recruit quality researchers to the reserve during the evaluation period. Researchers are routinely invited to JBNERR to learn about reserve priorities. The Research Coordinator often speaks as a guest lecturer at commonwealth universities. These activities have increased awareness of and interest in the reserve's research and monitoring program among both researchers and students. NOAA commends JBNERR's research and monitoring program outreach efforts and encourages the reserve to develop a research prospectus or similar outreach material describing its research interests and assets in order to attract more principal investigators and students to JBNERR.

## **4. System-wide Monitoring Program**

The reserve has institutionalized the System-wide Monitoring Program (SWMP). The program's data sondes and weather station are on-line, and the reserve will undertake a SWMP expansion in FY 02. Increased staffing has facilitated the institutionalization of SWMP and allowed the Research Coordinator to focus on a broader range of research and monitoring priorities. NOAA is impressed with JBNERR's progress with SWMP.

## **5. Geographic Information System**

The reserve is doing excellent Geographic Information System (GIS) work. Jobos Bay GIS layers have been classified into eight categories: (1) administrative boundaries; (2) biodiversity; (3) census; (4) environmental; (5) land use; (6) topographic; (7) transportation; and (8) water resources. The reserve collaborates extensively with the University of Puerto Rico and exchanges data layers that are applied to monitoring, cumulative impact analysis and land use planning with the Puerto Rico Coastal Management Program. NOAA encourages JBNERR to continue its collaborative GIS work with the University of Puerto Rico and the Puerto Rico Coastal Management Program.

## **6. Research Advisory Committee**

As described in Section IV-A-1-d, the Research Advisory Committee is a great asset to JBNERR. The Committee is comprised of exceptional researchers that have brought interesting and relevant research to the reserve, increased the visibility of the reserve, and

attracted students to the reserve. The Committee has assisted with development of the reserve's research and monitoring priorities and has contributed site profile data. The Committee has clearly assisted the institutionalization of JBNERR's research and monitoring program.

The Committee has interacted primarily through informal communications and meetings. Members have tended to work on their own projects directly with the reserve. The next step for the Committee is to become a more integrated working group. During the site visit, members discussed the need to broaden the Committee's expertise and responsibilities as well as the need to begin working collectively in an advisory capacity. NOAA commends the committee members on their research and their dedication to the reserve and encourages them to continue their evolution into a more formalized entity with the capacity to advise the reserve as a whole.

## **7. Research and Monitoring Staff**

The research and monitoring staff have done an excellent job stabilizing and advancing the reserve's research and monitoring program. The previous evaluation findings released in 1998 noted that a significant portion of the Research Coordinator's time was devoted to daily maintenance of dataloggers for the System-wide Monitoring Program (SWMP). Fortunately, the Research Coordinator now has strong support staff with expertise in biology and chemistry. The support staff assists with a variety of research and monitoring projects, which both frees the Research Coordinator to focus on other program priorities in addition to SWMP and enhances the research and monitoring program as a whole. For example, now that SWMP is institutionalized, the Research Coordinator plans to direct research and monitoring toward several of the reserve's management priorities, including mangrove restoration along the reserve's northern border and development issues in Camino del Indio. NOAA applauds his approach and commends the research and monitoring staff for their work.

## **8. Site Profile**

The Reserve System implementing regulations require each reserve to develop an environmental monitoring program capable of detecting significant changes in reserve resources and ecosystems. Development of the program is comprised of three parts: (1) conducting baseline studies, (2) preparing a comprehensive site profile; and (3) implementing a long-term standardized monitoring program. NOAA commends the reserve for its progress on JBNERR's site profile, which is nearly complete. The Research Coordinator is revising the research and monitoring chapter according to reserve management issues. During the site visit, the Research Coordinator reported that he expected the site profile to be completed and printed by September 2002. NOAA encourages JBNERR to continue its progress on the site profile and to finalize the document by September 2002.

## **C. EDUCATION**

### **1. Coastal Decision-maker Workshops**

NOAA applauds JBNERR's efforts to target diverse audiences with its coastal decision-maker workshops. The reserve has offered outstanding workshops not only to coastal decision-makers, but also to community leaders, teachers, researchers, and the general public. For example, JBNERR offered five workshops between April and September 2001: (1) Evaluation of Strategies for the Restoration and Management of Point and Nonpoint Source Contamination in the Jobos Bay Watershed; (2) Client Service for the Hospitality Industry – Part I; (3) Environmental Management of the Population and its Territorial Surroundings of JBNERR – A Case Study; (4) Client Service for the Hospitality Industry – Part II; and (5) The Planning Process. The reserve routinely collaborates with the Puerto Rico Coastal Management Program and Sea Grant to conduct the workshops. Future topics include using technology and watershed models to prepare restoration plans for Jobos Bay, Geographic Information System/Global Positioning System training, and community ecotourism training related to public access and interpretive trails.

NOAA is particularly impressed with the reserve's creativity in using several Coastal Decision-maker Workshops to encourage the community to view JBNERR as an ecotourism destination. In November 2001, an ecotourism kayaking operation based in the local community opened in JBNERR. The business uses the JBNERR interpretive kayak trail. Training the community to develop businesses that not only generate employment but that also conserve JBNERR's natural resources while educating the public is an excellent and innovative use of Coastal Decision-maker Workshops at the reserve.

### **2. Newsletter**

As described in Section IV-A-5-b, JBNERR, in collaboration with the University of Puerto Rico Sea Grant Program, publishes "Bahia de Jobos," a regular newsletter that describes the reserve's activities and programs. The reserve produces both Spanish and English versions of the newsletter, which receives wide distribution. The September 2001 edition of the newsletter included stories about the reserve's new management plan, a regional study examining links between air pollution and residential health, efforts to combat nonpoint source pollution, new interpretive trails, and educational opportunities at the reserve. The newsletter is an excellent education and outreach tool, and NOAA encourages JBNERR to continue its publication.

### **3. Information Center**

The reserve's Information Center continues archiving documents and references and also is expanding its services. A member of the education staff maintains the digital bibliography, which contained 1,576 references under 2,570 topics as of September 30, 2001. The education staff member uses a Lotus index search program to process the

references. NOAA is impressed with JBNERR's Information Center and encourages the reserve to continue its good work in this area.

#### **4. Education Advisory Committee**

As described in Section IV-A-1-d, the Education Advisory Committee is a talented and committed group that plays an important role at JBNERR. For example, the Committee has contributed significantly to the initiation of the reserve's Coastal Training Program. The reserve, in cooperation with Education Advisory Committee members, is conducting a marketing analysis to determine the feasibility of the Coastal Training Program as well as to define its target audience. The Puerto Rico Coastal Management Program and Sea Grant have been strong partners in this endeavor. NOAA commends the reserve and the Education Advisory Committee for their work to launch the Coastal Training Program.

#### **5. School Programs**

The reserve provides several educational programs for school children throughout the year. For example, school groups often tour the reserve and participate in activities to raise awareness about the reserve's environment and natural resources. As part of the 2001 Estuaries Day Celebration, the reserve participated in the "Estuaries Live" documentary with a group of students from a local elementary school. NOAA commends the reserve on its work with local school groups.

#### **6. Volunteer Programs**

The reserve's education program has developed a unique way of addressing the lack of volunteers who offer to work on-site at JBNERR. The reserve has encouraged individuals within the community to establish volunteer projects off-site that foster environmental awareness. For example, the reserve supported a local woman who established a recycling program at her children's school. Another volunteer is working to create an "ecological garden" or natural habitat area at a local school that can be used to complement and enhance environmental lesson plans.

NOAA encourages JBNERR to continue to develop a formal volunteer program to assist with the reserve's research, monitoring and education programs as well as increased visitation resulting from new facilities and trails. A strong volunteer program will allow the Visitors' Center to be open and most interpretive activities to be available on weekends. The volunteer program infrastructure is established and there appears to be renewed interest in the community. For example, a local man representing the Ecological Council for the Preservation of Hunting attended the public meeting during the evaluation site visit and stated that the group members were willing to work as volunteers at the reserve. Also, a community survey indicated that local housewives were interested in learning how to get involved at JBNERR. NOAA encourages JBNERR to continue to build both its on-site and off-site volunteer programs as well as its volunteer core.

## **7. Research and Education Coordination**

### **a. Transferring Research to the Community**

The reserve's education component works with the research and monitoring program to transfer information to the community. Cooperation on several occasions has provided human dimension research results to local individuals. For example, a professor at the University of Puerto Rico collaborated with JBNERR to conduct a regional study of air pollution and the health of residents in the Jobos Bay watershed. The main objectives of the study were to evaluate the environmental and social conditions of the residents, to understand the environmental issues in the area, and to determine what the residents knew about JBNERR. The research and monitoring program assisted with the study, and the education component helped translate the results into understandable and meaningful information that was then disseminated to the local community. The results of the study were distributed to local decision-makers, officials, and the media and also were displayed as part of JBNERR's Visitors' Center exhibits. The reserve's research and monitoring program also established an analytical well monitoring study, and the education component transferred the results to the local well owners. Residents attending the evaluation site visit public meeting noted that human dimension research like the public health and environment study and the well monitoring study is an extremely valuable initiative and urged the reserve to continue and to expand such efforts. NOAA applauds the research and monitoring program and the education component for their collaboration and encourages them to continue their work to transfer valuable research results to the public. NOAA also commends the reserve staff for expanding their roles and contributing to JBNERR's education component in the absence of an Education Coordinator.

### **b. Citizens Advisory Committee**

As described in Section IV-A-1-d, the Citizens Advisory Committee is an important tool for education and outreach and its work is beneficial to JBNERR. The Citizens Advisory Committee guarantees public representation in reserve issues. The Committee also ensures diverse and effective public participation in matters related to the operation and management of the reserve. The CAC assists the Reserve Manager in gathering support for education programs and in encouraging community involvement in reserve activities.

The Committee has interacted primarily through informal communications and meetings. The next step for the Committee is to become a more integrated working group. During the site visit, members discussed the need for the Committee to begin working collectively in an advisory capacity. NOAA commends the committee members on their hard work on behalf of the reserve and encourages them to continue their evolution into a more formalized entity with the capacity to advise the reserve as a whole.

## **D. RESOURCE INTEGRITY**

The 312 evaluation team finds that illegal encroachments, impacts from illegal diking and channelizing activities, and development pressures in and adjacent to the reserve continue to significantly degrade reserve resources and adversely affect the water quality of the estuary. DNER's Special Planning Area process, permitting, and enforcement efforts have not been effective to date in addressing these issues.

Pursuant to the National Estuarine Research Reserve System (NERRS) program regulations (15 CFR Part 921), NOAA is responsible for ongoing oversight and evaluation of designated reserves. In accordance with procedures set forth in the Coastal Zone Management Act (CZMA) and the evaluation regulations (15 CFR Part 928), NOAA may make a finding of non-adherence. If necessary actions to address the issues are not taken, NOAA can invoke interim sanctions. In extreme cases, NOAA may withdraw designation of a reserve based on a failure of a state or territory to address areas of non-adherence. Section 921.40 of the NERRS program regulations lists the indicators of non-adherence that NOAA should consider in determining whether to invoke interim sanctions, including the following:

(7) Inadequate implementation of the reserve protection plan. Indicators of inadequate implementation could include: evidence of non-compliance with reserve restrictions, insufficient surveillance and enforcement to assure that restrictions on use of the reserve are adhered to, or evidence that reserve resources are being damaged or destroyed as a result of the above.

(8) Failure to carry out the terms of the signed Memorandum of Understanding (MOU) between the state and NOAA which establishes a long-term state commitment to maintain and manage the reserve in accordance with section 315 of the Act. Indicators of failure could include: state action to allow incompatible uses of state-controlled lands or waters in the reserve, failure of the state to bear its fair share of costs associated with long-term operation and management of the reserve, or failure to initiate timely updates of the MOU when necessary.

In the MOU between the Commonwealth of Puerto Rico and NOAA signed in June 1993, the parties agreed to a common set of goals and objectives that included the following:

- to ensure a stable environment for research through long-term protection of estuarine reserve resources;
- to assess the effects of human activities on the ecosystem and to forecast or mitigate the potential environmental deterioration caused by such human activities;
- to protect the fragile or rare resources of JBNERR;

- to balance the demands imposed on the resources by various activities that will determine the types and levels of uses that are consistent with protecting the estuarine environment for the education, enjoyment, and utilization of future generations.

In the MOU, DNER agreed to "operate and manage JBNERR in accordance with the implementing regulations of Section 315 of the CZMA." For reasons detailed below, NOAA finds that DNER is not fulfilling all of its responsibilities under the MOU. NOAA has a longstanding programmatic interest, statutory responsibility, and financial commitment to DNER to protect JBNERR from any adverse activities within or outside reserve boundaries that jeopardize the ecological integrity of the area. Accordingly, NOAA offers whatever assistance DNER requires to resolve JBNERR resource management issues.

### **1. Las Mareas and Camino del Indio Property Invasions and Resource Damage**

JBNERR is facing continuing property invasions and accompanying severe resource degradation along its western boundary, principally in the areas of Las Mareas and Camino del Indio (See Appendix A). Rampant unlawful development characterizes these areas. Over time, JBNERR staff members have documented numerous incidences of illegal construction, fill, and road paving. These activities have prevented water exchange between the Mar Negro Lagoon and the Caribbean Sea, diminishing water quality. As a result, habitat mortality has increased rapidly, including mangrove loss. Illegal construction around and within JBNERR is a longstanding issue. Unpermitted structures, both on land under contested ownership and on land owned by the commonwealth, continue to be built. Existing illegal structures continue to expand through additions. Frequently, the Puerto Rico Electric Power Authority and the Puerto Rico Aqueduct and Sewer Authority provide these structures with electricity and running water.

During the time of the 1998 evaluation site visit, the evaluation team carefully documented illegal encroachment and resource damage in Las Mareas and Camino del Indio. Prior to the 1998 evaluation site visit, the Reserve Manager installed two gateposts on either side of a road in the Camino del Indio area beyond the last illegal structure. The Reserve Manager intended to erect a gate across the road to prevent further encroachment onto reserve property. However, individuals who had constructed or wished to construct residences on reserve property along the road filed a lawsuit seeking an injunction against completion of the gate.

In response to this issue, the 1998 evaluation findings state:

It is in the best interest of NOAA and DNER to actively defend against this litigation. DNER should ensure that there are no further encroachments on JBNERR property. It is also in the best interest of NOAA and DNER for DNER to use this opportunity to file a cross-complaint asking the courts during this litigation to issue a permanent injunction against any construction on JBNERR land, or in mangrove areas in or adjacent to the reserve. There were visual



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indications – such as power lines and fire hydrants – that additional structures were being planned for lots that were well within the boundaries of the reserve. DNER also may be able to use this opportunity to ask the court to order those who built illegally to dismantle their structures and restore areas that have been illegally dredged and filled. Further, DNER is in a strong position to request that the court order those to do the restorative work they agreed to as part of an earlier lawsuit by the U.S. Army Corps of Engineers (U.S. District Court for the District of Puerto Rico Civil No. 77-173).

During the pendency of this litigation...it is necessary for the commonwealth to take intermediate measures to ensure that further development, legal or illegal, does not take place. One way may be to impose a moratorium on construction in the Las Mareas and Camino del Indio areas. Even after resolution of this immediate issue, it will remain necessary for DNER to investigate violations and enforce the commonwealth's laws equally and vigorously when it comes to encroachments on the reserve.

There is heightened interest in resolving this issue, and DNER is encouraged to request assistance from NOAA, such as appropriate legal assistance in the action for an injunction against the gate and technical assistance in damage assessment and restoration expertise.

During the 2001 evaluation site visit, the evaluation team visited Las Mareas and Camino del Indio and was dismayed to witness that encroachments and illegal construction in both areas have continued unabated. At the time of the 1998 evaluation site visit, the majority of illegal houses in the Las Mareas area were poorly constructed, substandard structures. When the evaluation team visited Las Mareas in 2001, it found that the houses had been rebuilt with cinder blocks and concrete using FEMA disaster assistance awarded in the aftermath of Hurricane Georges (September 1998). Within the gateposts along the road in Camino del Indio, the evaluation team found a newly constructed house as well as a number of fenced lots for sale.

Regarding the litigation discussed in the 1998 evaluation findings, it appears that little progress has been made – the case has yet to be heard. During the 2001 site visit, the evaluation team met with representatives of DNER's Legal Division, who reported on the status of the litigation. A pre-trial conference has been held with the plaintiffs' attorneys. Next steps are to hold a pre-trial conference with the judge, prepare a pre-trial report, and then hold the trial. The evaluation team expressed serious concern about the delays in litigation. The Legal Division noted that the delays are related, in part, to conflicts of interest among several Aguirre judges that had been assigned to hear the case. For example, one of the judges has a brother with a house in Camino del Indio. The Legal Division eventually asked for a change of venue. At the time of the site visit, it had been decided that a judge from San Juan would hear the case in Guayama. Delays in litigation are also due to changes in judges and agency leadership related to the 2000 gubernatorial election. Further complicating the matter, several of the original plaintiffs have sold their properties and new owners have been substituted.

Regarding enforcement, DNER met with other agencies, including the Rules and Permits Administration, Aqueduct and Sewer Authority, Planning Board, and U.S. Army Corps of Engineers (USACE), to request enforcement of their authorities in the Camino del Indio area in October 2000. During the review period, USACE pursued several enforcement actions, such as cease and desist orders and orders to restore, in the Camino del Indio area. USACE representatives have been coordinating their efforts with JBNERR and appreciate access to the reserve's inventory of houses and landowners. USACE is using the inventory to write to landowners to follow up on after-the-fact permits and other remedial actions. During the 2001 evaluation site visit, DNER indicated that the Secretary would write to the agencies again requesting enforcement of their authorities.

NOAA is disappointed and greatly concerned about the continued encroachment and illegal construction in Las Mareas and Camino del Indio. While interagency coordination clearly is needed to address these problems, DNER must address regulatory noncompliance and take a strong position to prevent further encroachment on reserve property and attendant resource degradation. Obviously, serious and coordinated recovery work is needed. NOAA recommends a Recovery Action Plan with the following elements:

- Overview of actions taken to prevent illegal construction and the results of each action;
- Documentation of recent encroachments – including water and electric connections and FEMA-related construction – and resource damage;
- Boundary delineation and some type of barrier to prevent further expansion into the reserve;
- Interagency coordination with the municipality to resolve boundary issues and prevent further encroachment;
- Enforcement by the Ranger Corps and USACE combined with Legal Division support;
- Litigation;
- Negotiations with the Puerto Rico Electric Power Authority and the Puerto Rico Aqueduct and Sewer Authority to stop providing electricity and running water to the area;
- Restoration and re-establishment of water flow between Mar Negro and the Caribbean Sea;
- Land acquisition; and

- Technical assistance and training coordinated by JBNERR.

**5. NECESSARY ACTION:** Within six months of receipt of the final evaluation findings, DNER must submit to NOAA a Recovery Action Plan and timeline for addressing encroachment and illegal construction on reserve property and attendant resource degradation. The plan must include the elements described in these findings and identify specific actions with target dates. Progress on the implementation of the plan shall be reported in JBNERR's operations awards semi-annual progress reports.

## **2. Resource Degradation on the Northern Boundary**

Hacienda Aguirre is a former sugar cane estate bordering JBNERR. The Puerto Rico Land Authority (PRLA), part of the Puerto Rico Department of Agriculture (PRDA), leased the agricultural lands to Lippy Brothers, Inc. to convert for a corn research project. In 1993, PRLA began preparing land for the project. Preparations included:

- Rebuilding and widening an old dike on reserve property in order to put in a road;
- Clearing and excavating six drainage ditches from the agricultural lands through JBNERR mangroves to the open waters of Jobos Bay;
- Clearing vegetation and discharging fill and other excavated materials in the area of the ditches within reserve boundaries; and
- Clearing two acres of forested land on reserve property, part of which was planted subsequently with corn.

These activities occurred in mangrove forests, saltflats, and herbaceous marshes. Although the boundary between JBNERR and Hacienda Aguirre was not marked at the time, it was clear that the activities had occurred both inside and just beyond the reserve boundary. The Reserve Manager first identified the wetlands destruction in late 1994. She reported the problem to DNER enforcement personnel, but no action was taken. Further damage was discovered in March 1995 during a NOAA Section 312 evaluation site visit (See Appendix A). Upon investigation, it was evident that the wetlands destruction was unauthorized; the U.S. Army Corps of Engineers (USACE) had not issued any Section 404 permits allowing PRLA to undertake the activities described. In response, USACE issued PRLA a cease and desist order in May 1995 and elevated the case to the Environmental Protection Agency (EPA) Region II due to PRLA's status as a repeat violator.

EPA initially responded by encouraging DNER to attempt to resolve the issue voluntarily. EPA Region II met with DNER and PRLA in December 1995 to discuss a potential resolution, but with no results. The site continued to deteriorate and JBNERR found evidence of pesticide disposal in the drainage ditches. After a site inspection in March 1996, EPA prepared a Consent Order requiring PRLA to undertake a number of

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actions. Some of the actions were directed at immediate correction of the violations, and others were intended as compensation for the adverse impacts of PRLA's illegal activities. The actions included removing the earthen dike and all dirt roads, backfilling all drainage ditches, replanting mangroves, completing a hydrology study of the Jobos Bay watershed, posting signs along the boundary between JBNERR and PRLA property, designing and constructing a vegetated filter strip along the boundary, and constructing two new acres of mangrove wetlands. The final Consent Order was executed in July 1997.

NOAA has been involved with the illegal fill issues along JBNERR's northern boundary since the Section 312 evaluation site visit in March 1995. The Section 312 evaluation findings issued in September 1995 required DNER and JBNERR to take immediate steps to stop the habitat destruction on the reserve. NOAA sent a letter to DNER in March 1996 citing its longstanding interest, statutory responsibility, and financial commitment to DNER; noting that PRLA's encroachment on reserve resources had severely compromised the overall value of the site; and again recommending corrective actions.

At the time of the Section 312 evaluation site visit in March 1998, a massive black mangrove die-off was occurring as a result of the altered hydrologic regime. The PRLA had completed some of the Consent Order actions and was addressing several additional requirements. Completed actions included removing the dike, backfilling the drainage ditches, and removing and grading excess fill in closed channel areas. In order to accommodate better reseeding, PRLA also cleared dead mangroves resulting from hydrological alterations to the area. The Section 312 evaluation findings issued in July 1998 carefully documented the history of the illegal fill situation along the reserve's northern boundary, emphasized the importance of completing Consent Order actions in a timely manner, and noted that next steps included: (1) preparing a comprehensive hydrologic study of the Jobos Bay watershed; (2) replanting the affected wetlands with mangrove seedlings; (3) transferring the compensatory mitigation site to JBNERR; (4) preparing the filter strip; and (5) posting signs along the boundary between JBNERR and PRLA property. The evaluation findings also noted that, during the three-year review period, NOAA and the Reserve Manager were in constant contact with EPA, PRLA, PRDA, and DNER urging them to make the recovery plan and Consent Order a top priority. Finally, the evaluation findings encouraged the Commonwealth of Puerto Rico to complete the Consent Order actions as well as to ensure an adequate and appropriate buffer on agricultural lands to protect reserve wetlands from further degradation.

The Consent Order requirement to construct two new acres of mangrove wetlands was intended as compensation for permanent impacts to a two-acre area of mangroves at the northern edge of JBNERR that could not be replanted easily. However, in July 1999, at PRLA's and DNER's request, the requirement was replaced with a provision that PRLA transfer a parcel of vacant property to DNER for incorporation into JBNERR. The 24-acre parcel of secondary forest borders a mangrove swamp and currently belongs to PRLA's Esperanza Anca Farm, located to the west of Hacienda Aguirre. DNER intends to use the parcel for educational nature trails along the edge of the mangrove swamp.

PRLA and DNER proposed the land transfer in June 1999, the parcel was surveyed by PRLA, and EPA approved the Consent Order modification in July 1999.

Following the 1998 evaluation of JBNERR, the hydrologic study of the Jobos Bay watershed has been completed, and signs have been posted along the boundary between JBNERR and PRLA property. However, PRLA still has not replanted mangroves, designed and constructed the filter strip, or transferred the 24-acre parcel of secondary forest to DNER. During the 2001 evaluation site visit, the evaluation team met with Mr. Juan Rojas of the PRLA, who had worked on the first phase of the restoration project and had just been reassigned to the case. Mr. Rojas explained that, following endorsement of the land transfer by the current DNER Administration, PRLA referred the case to PRDA for certification that the land no longer retains any agricultural value. Once PRDA provides the necessary certification, the transfer will be referred to the Puerto Rico Planning Board, which is responsible for changing the zoning of the parcel. When the zoning is changed, the case goes before the PRLA Board for approval. Following PRLA approval, the transfer must be documented by the Land Registry and then will be complete.

The evaluation team was encouraged to hear that Mr. Rojas had been reassigned to the case. Mr. Rojas reported that the contractor who had conducted the hydrological study also was supposed to design the filter strip and assist with development of a restoration plan. Unfortunately, the quality of the completed hydrological study is lacking and seriously limits the utility of the study. Furthermore, the contractor did not design the filter strip or assist with development of a restoration plan. While disappointed by this information, the evaluation team was encouraged to learn that Mr. Rojas is now responsible for the filter strip design and construction and associated water management. The evaluation team was also pleased to hear that Mr. Rojas has met with the U.S. Geological Survey and requested technical assistance to design an appropriate filter strip for Jobos Bay Estuary's hydrological conditions.

The evaluation team discussed the estuary's hydrological conditions with Mr. Rojas. The aquifer in the area is extremely low, and freshwater sources to the estuary are limited. Therefore, Mr. Rojas and the Reserve Manager have begun considering alternative sources of fresh water to restore the hydrology of the mangrove wetlands. For example, Mr. Rojas has met with the Puerto Rico Electric Power Authority (PREPA) to discuss the feasibility of using discharge water from the Aguirre Thermoelectric Power Plant. Mr. Rojas has also explored the possibility of obtaining freshwater from the Patillas Aqueduct through ponds and irrigation channels. Following the meeting with Mr. Rojas, the evaluation team also had a similar discussion about the estuary's hydrological conditions and sources of freshwater with a PREPA representative.

The evaluation team discussed the issues surrounding PRLA's failure to complete the Consent Order actions with DNER at length. Upon his arrival at DNER in November 2001, Secretary Salas took several immediate steps to address the problem. For example, Secretary Salas sent a letter to the PRLA Executive Director requesting compliance with the Consent Order. He also has held meetings with the PRLA Executive Director and

staff. NOAA applauds these initial actions and urges the Secretary to continue his oversight, including evaluating freshwater sources necessary for the restoration of the mangrove wetlands and investigating an appropriate buffer system.

In April 2002, EPA sent a letter to PRLA reminding it that it is still responsible for replanting mangroves, designing and constructing the filter strip, and completing the land transfer. In the letter, EPA also registered concern with PRLA's slow progress in fulfilling the remaining requirements of the Consent Order, particularly regarding the land transfer since the matter has been pending for more than two years. EPA requested information on the present status of the land transfer, including the date by which PRLA expects the transfer to be completed. Additionally, EPA has requested a conference call with PRLA and DNER to discuss measures that should be taken to address mangrove restoration and protection of JBNERR from agricultural pollutants.

NOAA echoes EPA's concern with PRLA's slow progress in fulfilling the remaining requirements of the Consent Order. During the evaluation site visit, a trip to the area of the reserve affected by PRLA actions taken in 1993, nearly ten years ago, revealed continued degradation of the resources, particularly the mangroves. The black mangrove forest – a vital part of the JBNERR ecosystem – has completely died off. NOAA wishes to emphasize, yet again, the paramount importance of completing the Consent Order actions as soon as possible. NOAA urges PRLA, PRDA, DNER, and EPA to make completion of the Consent Order a top priority. While the responsibility for implementing the Consent Order actions lies with PRLA, DNER must assume a leadership role in addressing the problem.

**6. NECESSARY ACTION:** DNER must lead the effort to coordinate and complete the land transfer, design and construction of the filter strip, and mangrove restoration on the northern portion of the reserve in order to achieve a more sustainable ecological system. Within six months of receipt of the final evaluation findings, DNER must submit to NOAA an action plan and timeline for coordinating efforts with PRLA and other agencies as necessary to complete the Consent Order actions. The plan must identify specific actions with target dates that will advance the progress of the land transfer, design and construction of the filter strip, and mangrove restoration until completed. Progress on the implementation of the plan shall be reported in JBNERR's operations awards semi-annual progress reports.

### **3. Development Pressures Impacting the Reserve**

Throughout the site visit to JBNERR, the evaluation team frequently saw evidence that development is a key environmental issue in the Jobos Bay watershed. Development is putting pressure on the reserve in two significant ways: (1) by physically altering the reserve, and (2) by physically displacing the reserve. The evaluation team also heard about development pressures in the Jobos Bay watershed from many individuals, including members of the Research Advisory Committee, the Chair of the Citizen's Advisory Committee, representatives from federal agencies, and members of local communities. A Research Advisory Committee member commented that the natural

heritage of the Jobos Bay watershed is subject to political will. One participant at the public meeting noted that the local communities are glad that JBNERR protects the valuable resources of the Bay as much as possible, but that the authorities are inadequate to protect the watershed. The resident reported that the “small people” are suffering as a result of the development pressures and called for more rigorous restrictions on large contaminating sources. Development pressures on JBNERR include:

- The Salinas municipal landfill. The 25-30 acre landfill is located next to the reserve and local community. The company that runs the landfill has proposed to expand the landfill by 50 acres.
- A tire recycling facility. The recycling plant, with tons of old tires stored in former sugar cane processing buildings, is located adjacent to JBNERR’s Visitors’ Center. In 2001, arson burned many of the tires, creating a dangerous environmental situation. As a result of a lawsuit, the company that runs the facility was ordered to clean it up. Unfortunately, at the time of the site visit, the company had not yet taken any actions to address the problem.
- The Aguirre Thermoelectric Power Plant. The thermoelectric plant is located along the reserve’s northeastern boundary and has been fined several times by the Environmental Protection Agency (EPA) for violations of the Clean Air Act. At the time of the site visit, EPA had recently cited and fined the plant as the second largest air pollution source in Puerto Rico.
- A rock quarry and aggregate processing plant. The quarry and processing plant are located less than 300 meters from a residential community near the reserve. At the time of the site visit, the company that runs the quarry had moved to renew its operating permits. Several individuals attending the public meeting noted that they had submitted comments to DNER concerning the quarry’s ecological effects on the surrounding landscape as well as its health effects on nearby residents.
- The Guayama Superfund site. The Fibers Public Supply Wells serve as a standby water supply for Guayama. Four of the five wells were closed after a 1982 survey detected contamination by halogenated solvents. In 1991, the parties potentially responsible for site contamination completed an investigation into the nature and extent of contamination at the site. The Environmental Protection Agency approved a Remedial Action Work Plan in 1996.
- Phillip’s of Puerto Rico, Inc. Phillip’s runs a petrochemical plant in Guayama that produces benzene. Several individuals attending the public meeting registered concerns about health impacts of the plant.
- A power plant in Guayama. At the time of the site visit, a coal-burning power plant under construction in Guayama was destroying wetlands in the watershed. Local residents are concerned about potential air pollution as a result of plant emissions.

- A proposed manure composting facility. The Puerto Rico Land Authority has proposed locating a large chicken manure composting facility in an area bordering the reserve. One of the most significant risks of the proposed facility is nitrate contamination from runoff. The reserve has identified and the U.S. Geological Survey has confirmed existing high nitrate levels in the watershed. Additionally, the odor from such a facility may create problems for reserve visitors and discourage use of certain interpretive nature trails.

The numerous development pressures on the Jobos Bay watershed have severely taxed the area's water supply and adversely affected water quality. DNER leadership reported that, as a result of groundwater shortages, the Department and the Puerto Rico Planning Board are no longer approving projects in the Jobos Bay watershed that place additional pressure on groundwater supplies. Additionally, the Jobos Bay watershed has been designated as one of three priority watersheds in Puerto Rico because of its serious nonpoint source pollution problems.

In light of the many development pressures in the Jobos Bay watershed, it is essential that the reserve is not perceived as an isolated parcel of land unaffected by activities conducted in the watershed. Clearly, development pressures in the Jobos Bay watershed have an impact on JBNERR and its resources. The reserve is an integral component of the entire Jobos Bay ecosystem and must be viewed as such. Indeed, the reserve is ideally situated to assist DNER leadership by increasing the transfer of research and technical information on critical environmental issues in the watershed.

**7. PROGRAM SUGGESTION:** NOAA urges DNER to work with the reserve to evaluate existing development pressures in the Jobos Bay watershed and their effects (primary, secondary, and cumulative) on JBNERR. The results of the evaluation should be carefully considered in all future DNER decisions regarding development activities in the Jobos Bay watershed.

#### **4. Planning**

Clearly, efforts to address the development pressures described in Section IV-D-3 will require an interagency planning approach. The Puerto Rico Coastal Management Program (PRCMP) designated Jobos Bay and the surrounding environment as a Special Planning Area (SPA), which is defined as “an important coastal resource area subject to the serious presence of potential use conflicts, and therefore, requiring detailed planning.” The concept of SPA planning and management has placed new emphasis on reaching consensus on future development policy among all concerned federal, commonwealth, and local entities. The approach calls for implementation of a top-down conflict resolution strategy based on bottom-up identification of relevant issues to be addressed through an interagency planning process. Consensus items and policy are memorialized in a memorandum of understanding among the participants in the SPA process, which is facilitated and coordinated by DNER. In order to be implemented, an SPA plan must be adopted by the Puerto Rico Planning Board and then approved by the Governor.



Several years ago, a high-level interagency committee developed an SPA plan for Jobos Bay and signed a memorandum of understanding. The participating agencies approved the SPA process and the conflict resolution, but they did not approve the actual plan. Currently, the plan is circulating among the cooperating agencies, including the Puerto Rico Planning Board for technical comments. However, primarily as a result of a change in administration in January 2001, the review process has stalled and comments are overdue. Unfortunately, the Jobos Bay watershed remains without a coordinated decision-making process that engages all stakeholders. NOAA urges DNER to take immediate steps to address this problem.

**8. NECESSARY ACTION:** DNER must take steps either to reactivate the SPA planning process for the Jobos Bay watershed or to develop an alternative coordinated interagency decision-making process regarding development policy. Within six months of receipt of the final evaluation findings, DNER must notify NOAA in writing of the actions it plans to take to address the problem. Progress on the implementation of these actions shall be reported in JBNERR's operations awards semi-annual progress reports.

## **5. Permitting**

As previously described in these findings, NOAA and JBNERR are concerned about the impacts of recent and proposed development on the Jobos Bay watershed. In particular, the reserve is concerned about existing and proposed projects that require large amounts of water. Short-term effects of development and construction can include increased sediment loading and habitat destruction. Long-term effects, especially changes in hydrology and the aquifer, may result in detrimental changes in marsh habitats, lost mangrove and coral reef productivity, and reduced water quality that may affect coastal resources and public health.

In an effort to simplify and accelerate the permitting system as well as to make it respond to legal, procedural, and public expectations, DNER created a fast-track permit center to facilitate processing of minor permits. Essentially, permits that would not receive comments from resource agencies are cleared within five days. For those projects requiring more information, an additional 45-day review period may be granted.

Currently, applications for permits and endorsements pertaining to the Jobos Bay watershed that are reviewed by DNER's Consultation and Endorsement Unit, Water Resources Unit, and the Earth Movement Unit are not routinely forwarded to either JBNERR or the Puerto Rico Coastal Management Program. Reserve staff members estimate that they receive approximately one percent of the applications for development in the watershed to review. This issue was raised in the 1998 evaluation findings, which suggested that DNER routinely forward permit applications for activities that may affect JBNERR to the reserve for review and comment.

Since JBNERR is located within DNER, it is feasible for permit applications for the Jobos Bay watershed to be forwarded to reserve staff for review. While not all

applications will require comment, the process will allow reserve staff to respond as appropriate and to be more informed and helpful to local constituents when they make inquiries about a particular project. Depending upon the size and complexity of the proposed project, the 45-day review extension may need to be granted occasionally. Through the review process, JBNERR may provide constructive comments or suggest options for DNER to provide to the applicant. Also, the reserve's scientific and technical expertise will be helpful to DNER during the review process. NOAA urges DNER to routinely forward permit applications for activities that may affect JBNERR to the reserve for review and comment. NOAA is encouraged that, during the evaluation site visit exit interview, DNER Auxiliary Secretary for Integrated Planning Celso Rossy volunteered to prepare an administrative order to ensure that permit applications are forwarded to the reserve.

**9. NECESSARY ACTION:** DNER must develop a formal mechanism to forward permit applications for activities in the Jobos Bay watershed to the reserve for review and to incorporate reserve comments into the decision-making process. Within six months of receipt of the final evaluation findings, DNER must notify NOAA in writing of the mechanism it has established to address this issue. Progress on the implementation of this mechanism shall be reported in JBNERR's operations awards semi-annual progress reports.

## **6. Enforcement**

The reserve and its immediate environment fall under several different and sometimes overlapping jurisdictions. Therefore, interagency coordination and cooperation is essential to ensure the integrity of JBNERR and implementation of its management plan. Primary responsibility for surveillance and enforcement lies with DNER's Ranger Corps and Legal Division.

To fulfill the goals and objectives of the management plan, the reserve works to coordinate responses to persistent enforcement problems, such as illegal fill and construction, by working through DNER in conjunction with other commonwealth and federal regulatory and enforcement agencies. For example, the U.S. Army Corps of Engineers has recently increased its enforcement actions in the reserve. During the 2001 evaluation site visit, representatives reported that the Reserve Manager has been helpful in providing them with information about violations as well as technical assistance through workshops. They noted that they would like to coordinate their enforcement efforts with the Ranger Corps through the reserve. Additionally, a process has been established to notify the Reserve Manager within 72 hours of all citations and warnings issued within reserve boundaries that pertain to dumping, criminal activities, environmental damage, and other serious infractions. Reserve staff maintain a record of reserve enforcement actions and periodically review enforcement needs.

Although still insufficient, surveillance has improved with the recent assignment of two uniformed Ranger Corps officers from the Guayama region to the reserve. The rangers work as a team to patrol reserve land and water and their shifts are flexible, allowing

them to cover special events. Efforts to improve communication and cooperation among JBNERR, DNER's regional office, and the Ranger Corps based locally in Puente de Jobos continue. During the site visit, several discussions indicated that some of DNER's administrative procedures limit the effectiveness of the rangers and warrant a legal review. It was also suggested that the Secretary issue an administrative order requiring DNER staff to process JBNERR enforcement actions immediately. NOAA encourages DNER to review its administrative procedures in the context of Ranger Corps effectiveness. DNER should take action to improve the department's support of the Ranger Corps and to increase the effectiveness of their enforcement actions.

Despite improvement in surveillance, the rangers assigned to JBNERR tend to patrol the reserve primarily for drug interdiction, speeding boats, and boating gear violations. Ranger orientation to enforcement at JBNERR should include greater awareness of issues including unauthorized camping and camp fires; cutting mangroves and tying boats to mangrove roots; anchoring in inappropriate areas; jet ski use; illegal fill and construction, and wetland destruction. The reserve has prepared a reporting sheet that addresses these issues and will continue to work with the rangers to ensure better understanding of JBNERR's enforcement needs. NOAA encourages the reserve and the Ranger Corps to work together to improve enforcement at JBNERR.

While some aspects of surveillance and enforcement have improved during the review period, JBNERR clearly needs increased support from the Ranger Corps for enforcement. In addition to conducting enforcement activities following violations, the rangers should strive to prevent violations to the greatest extent possible. The rangers need to have a regular presence throughout the reserve as well as back-up available when violations occur, especially in cases of illegal construction. The reserve would also benefit from an increased ranger presence on the water during weekends, when more people pursue recreation on the bay. During the site visit, the evaluation team was encouraged to hear Secretary Salas report that he plans to establish a Ranger Corps office in Salinas to address reserve enforcement needs. He indicated that he also had requested six additional rangers to patrol the area. NOAA applauds these actions and urges the Secretary to continue to be actively involved in the resolution of surveillance and enforcement issues in the JBNERR watershed.

**10. NECESSARY ACTION:** DNER must take action to provide an increased and regular Ranger Corps presence throughout the reserve as well as to ensure that back-up officers will be available when they are required. DNER also must provide necessary legal support to Ranger Corps enforcement actions in a timely manner to ensure that rangers feel empowered to engage in appropriate enforcement, particularly in cases of illegal fill and construction on reserve property. Within six months of receipt of the final evaluation findings, DNER must notify NOAA in writing of the actions it has taken to improve Ranger Corps staffing and effectiveness at JBNERR. Progress on the implementation of these actions shall be reported in JBNERR's operations awards semi-annual progress reports.

## **7. Municipality Coordination**

JBNERR is located in the Aguirre Ward of the Municipality of Salinas and in the Jobos Ward of the Municipality of Guayama. Both Salinas and Guayama are developing territorial municipal plans. Salinas and Guayama each received a hard copy and a digital copy of the reserve's revised management plan as well as 18 accompanying GIS layers. Unfortunately, JBNERR has not seen either of the municipalities' draft plans. The reserve currently is dependent upon the Puerto Rico Planning Board to integrate appropriate components of the revised management plan into the municipalities' plans. However, the Planning Board has not solicited input from JBNERR regarding the municipalities' plans. JBNERR needs to play a larger role in the development of these municipal plans in order to ensure compatibility with the reserve's revised management plan. NOAA encourages the reserve to continue to provide the municipalities with technical assistance and information, such as GIS layers. NOAA also encourages JBNERR, to the extent practicable, to expand outreach efforts in Salinas and Guayama municipalities.

**11. PROGRAM SUGGESTION:** NOAA encourages JBNERR to work with the Planning Board and the municipalities of Salinas and Guayama to ensure compatibility of the municipality plans with the reserve's revised management plan.

## **8. Boundary Expansion**

As described in Section IV-A-1-c, the reserve's FY 01 acquisition plan identifies five sectors: (1) the mangrove forest behind the Visitors' Center, (2) Cayos La Barca, (3) a salt flat on the western boundary of the reserve, (4) an upland forest area on the northern boundary between reserve and agricultural land, and (5) a mangrove corridor along Mar Negro. Of the five sectors, the Puerto Rico Land Authority agreed to transfer the upland forest to the reserve as a compensation site per an Environmental Protection Agency Consent Order. The 15-acre salt flat belongs to the Puerto Rico Housing Department. Of the remaining sectors, the mangrove area behind the Visitors' Center and Cayos La Barca retain the highest priority as a result of increasing development pressures in the area. The lot behind the Visitors' Center would provide the only direct access to Jobos Bay for the reserve. If the reserve pursues acquisition of the sectors identified in its FY 01 acquisition plan, JBNERR could conceivably expand by 300 acres during the next three years. Boundary expansion would provide the reserve with greater control over its resources as well as much-needed direct access to the Jobos Bay waterfront.

**12. PROGRAM SUGGESTION:** NOAA urges JBNERR to continue to pursue boundary expansion through acquisition of the sectors identified in the reserve's FY 01 acquisition plan, especially the Puerto Rico Housing Department's 15-acre salt flat on the western boundary of the reserve, the mangrove area behind the Visitors' Center, and Cayos La Barca.

## V. CONCLUSION

For the reasons stated herein, I find that the Commonwealth of Puerto Rico is not fully adhering to the programmatic requirements of the National Estuarine Research Reserve System in its operation of the Jobos Bay National Estuarine Research Reserve. NOAA highly commends JBNERR and DNER for stabilizing the reserve's staffing, developing key infrastructure, and implementing core programs. However, the reserve is experiencing significant resource degradation that threatens the health of this nationally recognized estuary and is jeopardizing its future value for coastal research, monitoring and education. In order to maintain JBNERR's designation, it is the commonwealth's responsibility to protect the natural and cultural resources of the reserve and to enforce the provisions of commonwealth law, especially the laws and regulations of DNER and the Puerto Rico Coastal Management Program. NOAA has a longstanding programmatic interest, statutory responsibility, and financial commitment to DNER to protect JBNERR from any adverse activities within or outside reserve boundaries that jeopardize the ecological integrity of the area. Accordingly, NOAA offers whatever assistance DNER requires to resolve JBNERR resource management issues.

This review contains 12 recommendations. Recommendations 1, 5, 6, 8, 9 and 10 represent **Necessary Actions** that must be completed by the commonwealth by the dates indicated. This review also sets forth six **Program Suggestions** that should be considered by the Commonwealth of Puerto Rico prior to the next Section 312 evaluation of the Jobos Bay National Estuarine Research Reserve. Appendix E presents a summary of the recommendations.

This is a programmatic evaluation of the Jobos Bay National Estuarine Research Reserve that may have implications regarding the commonwealth's financial assistance awards. However, it does not make any judgments on, or replace any financial audits related to, the allowability or allocability of any costs incurred.

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Douglas L. Brown  
Acting Director

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Date

## **VI. APPENDICES**

### **APPENDIX A.      RESOURCE INTEGRITY**

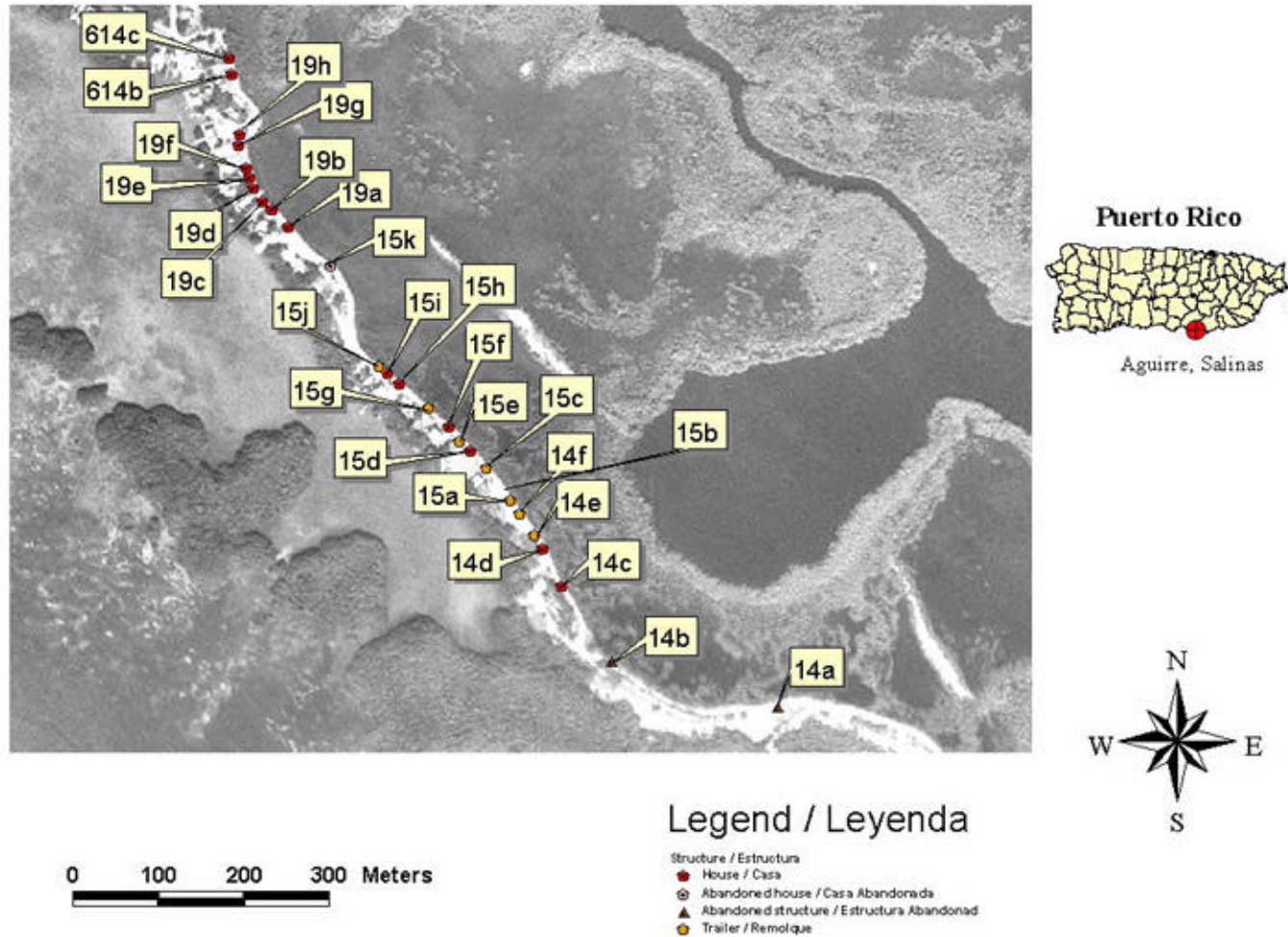
This appendix contains:

- A map identifying Camino del Indio, Las Mareas, and the area of resource degradation on the Northern Boundary
- An aerial photo of Camino del Indio with structures identified
- Photos of the structures identified in the aerial photo of Camino del Indio
- Photos of Las Mareas
- Photos of the area of resource degradation on the Northern Boundary

## Jobos Bay NERR Conflict Areas



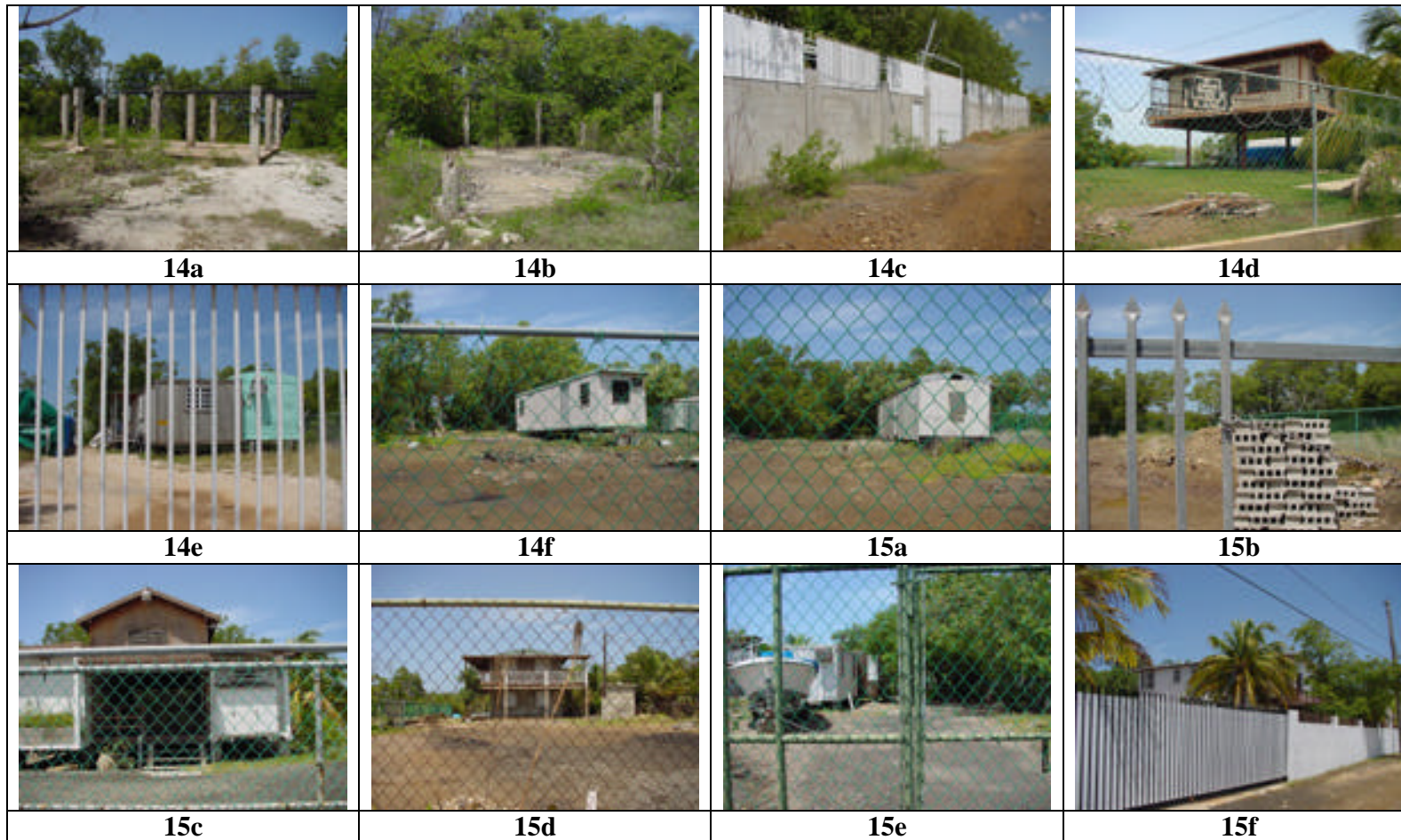
## Camino del Indio
















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**Photos of Structures Identified on Aerial Photo of Camino del Indio**










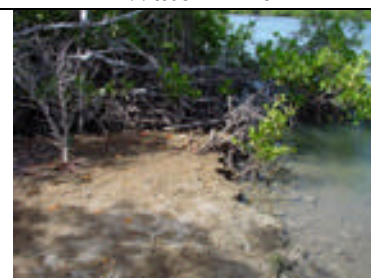



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<b>15g</b>	<b>15h</b>	<b>15i</b>	<b>15j</b>
			
<b>15k</b>	<b>19b</b>	<b>19c</b>	<b>19d</b>
			
<b>19f</b>	<b>19g</b>	<b>19h</b>	<b>614b</b>



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	Following are more photos from Camino del Indio		
614c		Trailer	House
			
Fenced Lot - Sold	Power Line	Water Line	Trash
			
Trash	Resource Degradation	Resource Degradation	Resource Degradation

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**Photos of Las Mareas**








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**Photos of Resource Degradation on the Northern Boundary**

			
<b>1995</b>	<b>1995</b>	<b>1995</b>	<b>1996</b>
			
<b>1997</b>	<b>1997</b>	<b>1997</b>	<b>1999</b>
			
<b>1999</b>	<b>1999</b>	<b>1999</b>	<b>2000</b>

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2000	2000	2001	

**APPENDIX B. PERSONS AND INSTITUTIONS CONTACTED**

**Jobos Bay National Estuarine Research Reserve Representatives**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>
Claudio Burgos	Staff	Jobos Bay National Estuarine Research Reserve
Luis Encarnacion	Research and Monitoring Staff	Jobos Bay National Estuarine Research Reserve
Iraida Garcia	Education Staff	Jobos Bay National Estuarine Research Reserve
Carmen Gonzalez	Reserve Manager	Jobos Bay National Estuarine Research Reserve
Enid Malave	Research and Monitoring Staff	Jobos Bay National Estuarine Research Reserve
Nilda Pena	Education Staff	Jobos Bay National Estuarine Research Reserve
Pedro Robles	Research Coordinator	Jobos Bay National Estuarine Research Reserve

**Commonwealth of Puerto Rico Representatives**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>
Jesus Cardona	Administrator, Natural Resources Administration	Puerto Rico Department of Natural and Environmental Resources
Gerardo Cerra	Surveyor	Puerto Rico Department of Natural and Environmental Resources
Damaris Delgado	Director, Bureau of Coasts, Reserves and Refuges	Puerto Rico Department of Natural and Environmental Resources
Ernesto Diaz	Program Manager, Puerto Rico Coastal Management Program	Puerto Rico Department of Natural and Environmental Resources
Leo Gonzalez	Federal Funds Accountant	Puerto Rico Department of Natural and Environmental Resources
Maritza Gonzalez		Puerto Rico Department of Natural and Environmental Resources – Ranger Corps

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Maria Ortega	Legal Aid to the Secretary	Puerto Rico Department of Natural and Environmental Resources
Celso Rossy Torres	Auxiliary Secretary for Integrated Planning	Puerto Rico Department of Natural and Environmental Resources
Salvador Salas	Secretary	Puerto Rico Department of Natural and Environmental Resources
Jose Tous	Attorney	Puerto Rico Department of Natural and Environmental Resources
Juan Zayas	Regional Director	Puerto Rico Department of Natural and Environmental Resources
Jorge Rivera	Under Secretary for Housing	Puerto Rico Department of Housing
Jaime Plaza		Puerto Rico Electric Power Authority
Juan Rojas		Puerto Rico Land Authority
Yusif Mafuz Blanco		Puerto Rico Department of Justice
Cynthia Torres Torres		Puerto Rico Department of Justice

**Federal Agency Representatives**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>
Lisamarie Carrubba		National Marine Fisheries Service
Noel Acevedo Mendez	Assistant District Counsel	U.S. Army Corps of Engineers
Edwin Muniz	Chief, Antilles Regulatory Section	U.S. Army Corps of Engineers
Jose Rosario		U.S. Army Corps of Engineers
Felix Lopez		U.S. Fish and Wildlife Service



**Academic Representatives**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>
Eddie Laboy Nieves		Inter-American University of Puerto Rico
Imar Mansilla		University of Puerto Rico
Luis Olivieri		University of Puerto Rico
Carlos Rodriguez Sierra		University of Puerto Rico
Jose Seguinot Barbosa		University of Puerto Rico
Manuel Valdes Pizzini	Director, Puerto Rico Sea Grant	University of Puerto Rico

**Private Citizens**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>
Mariluz Burgos		Local Ecotour Company
Aimee Ortiz Santos		Education Volunteer
Hector Vega	Chair	Citizens Advisory Committee

**APPENDIX C. PERSONS ATTENDING THE PUBLIC MEETING**

<b>Name</b>	<b>Affiliation</b>
Pierre Balzac	Water Ski Foundation of Puerto Rico
Mariluz Burgos	Local Ecotour Company
Noel Colon	Maravillas del Sur Ecotours
Damaris Delgado	DNER Bureau of Coasts, Reserves and Refuges Director
Juan Esteves	
Miriam Gallando Gonzalez	Volunteer
Carmen Gonzalez	JBNERR Reserve Manager
William Mendez	Volunteer
Aimee Ortiz Santos	Volunteer
Juan Rivera	
Yarisuelt Rivera Rodriguez	Volunteer
Noel Rivera Rosa	Dialogo Ambiental
Fernando Rodriguez	Consejo Ecologico Superior Conservacion
Omar Santiago	Executive Director, District Office of the Honorable Anibal Acevedo Vila
Tata Santiago	Comite Dialogo Ambiental
M. Burgos Cuevedo	
A. Mini	DNER
Franero O.	
Jorge I.	

## **APPENDIX D. RESPONSE TO WRITTEN COMMENTS**

The Evaluation Team Leader received an inquiry regarding water skiing at JBNERR from Mr. Pierre Balzac of the Water Ski Foundation of Puerto Rico. Mr. Balzac provided a variety of background information about water skiing with his inquiry. His questions (in bold) and NOAA's responses follow.

### **1. Please explain the legal basis used for the ban on water skiing at JBNERR.**

JBNERR operates under NOAA regulations and guidance as a federally-designated unit of the National Estuarine Research Reserve System (NERRS) and as a commonwealth entity with local, regional and commonwealth responsibilities. Federal regulations (15 CFR Part 921) provide five specific goals for the NERRS:

- Ensure a stable environment for research through long-term protection of NERR resources;
- Address coastal management issues identified as significant through coordinated estuarine research within the system;
- Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
- Promote federal, state, public and private use of one or more reserves within the system when such entities conduct estuarine research; and
- Conduct and coordinate estuarine research within the system, gathering and making available information necessary for improved understanding and management of estuarine areas.

Every reserve is required by National Estuarine Research Reserve System regulations to have an approved management plan. As described in Section IV-A-3 of these findings, JBNERR's revised management plan was approved by the Puerto Rico Planning Board and signed by the Governor, creating an enforceable document. The management plan sets forth the mission, goals, and objectives of JBNERR and establishes the policies that will protect the ecological integrity and natural resources of the reserve. In order to protect multiple uses of the reserve while protecting its special ecological attributes, a classification system has been established, within which compatible uses are allowed:

(1) Preservation Sectors – These areas require a high degree of protection due to their vulnerability, ecological importance, presence of flora and fauna, and/or historic or archeological values. Many of the areas classified for preservation include coves, shallow semi-enclosed areas, and fringing mangroves within the lagoon system. These have been identified as spawning areas and nursery grounds from valuable commercial fish species and habitat for endangered species. The preservation of these resource areas is vital to maintain the equilibrium and population dynamics of the estuary. Activities in designated preservation sectors are limited to research and monitoring. The use of motor vehicles is not allowed in these areas.

(2) Conservation Sectors – The vast majority of the reserve, including Mar Negro and Cayos Caribe, has been classified as a conservation sector. These are environmentally sensitive areas, and include wetlands, mangroves, and scenic outlooks that require protection against inappropriate or excessive use. Passive recreation activities such as bird watching, snorkeling, kayaking and diving are promoted as part of the reserve’s education and outreach plan. In order to provide access to the Las Mareas community, a right-of-way for boat traffic has been made available through the central corridor of Mar Negro. Boat size is limited to a maximum of 22 feet, and speed is limited to five knots.

(3) Limited Use Sectors – These areas are designated for education, outreach, and passive recreation activities. Interpretive trails, boardwalks, limited docking piers for public use, and minimum facilities have been constructed as required. Various points have been identified as sites where reserve visitors can find temporary shelter for eating and resting. Anchoring in designated areas is limited to a maximum of three hours. Docking and anchoring capacities have been established and appropriate signage has been posted. These measures allow access to more users while managing public use of the sites in a manner that does not threaten or significantly disturb the natural ecosystems. Passive recreation, such as bird watching, hiking, swimming, and snorkeling will be encouraged.

**2. Why favor only passive activities in the reserve instead of integrating a greater recreational diversity at JBNERR?**

Please see response to question #1.

**3. How does NOAA’s evaluation affect Puerto Rico governmental decisions that affect the development and recreational and educational use of the reserve?**

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides funding to the Commonwealth of Puerto Rico to implement the Jobos Bay National Estuarine Research Reserve. Section 315 of the CZMA provides for the periodic evaluation of all designated estuarine reserves. Reserve evaluations assess whether the lead agency is: (1) implementing and enforcing the approved management plan; (2) conducting research that is consistent with the approved estuarine research guidelines; (3) providing opportunity for educational and interpretive programs; (4) adhering to the terms and conditions of financial assistance awards, and (5) whether the designated reserve represents an area conducive to long-term protection and research. Based on the evaluation, NOAA produces written findings and recommendations, some of which may be binding, following the site visit. Program evaluations are used as a management tool to provide the state and NOAA a vehicle for improving the program.

**4. Why permit hunting for sport in the reserve that NOAA/DNER intends to preserve and protect, while banning a sport (water skiing) that does not involve the killing of any animals?**

Please see response to question #1.

**5. What research has taken place to determine that recreational water skiing within the reserve is harmful?**

Please see response to question #1.

**6. What is the evaluating committee's opinion about allowing recreational water skiing as a complement to environmental education at JBNERR?**

NOAA fully supports JBNERR's implementation of its approved management plan.

**APPENDIX E. SUMMARY TABLE OF ACCOMPLISHMENTS**

<b>Report Section</b>	<b>Issue Area</b>	<b>Accomplishment</b>
IV-A-1-b	Staffing	The reserve has filled key staff positions, which has greatly contributed to the stabilization and institutionalization of JBNERR and its key programs. The Reserve Manager and staff are doing an excellent job in furthering the goals of the reserve.
IV-A-1-c	Finance	The reserve achieved the desired results from funded tasks, built upon established projects, and submitted informative performance reports on schedule.
		DNER financial management and coordination with JBNERR has improved, particularly in the areas of accounting and purchasing. DNER is also improving the timeliness of its payments.
		The issue regarding the matching funds for JBNERR's FY 01 acquisition award has been resolved and the funds have been identified.
IV-A-1-d	Advisory Committees	JBNERR has established three outstanding advisory committees: (1) Citizens Advisory Committee, (2) Research Advisory Committee, and (3) Education Advisory Committee.
IV-A-2	Facilities	The reserve has significantly enhanced its facilities during the evaluation period.
IV-A-3	Management Plan	JBNERR has completed its revised management plan.
IV-A-4	Visibility	New facilities, staff, and research projects have increased the reserve's visibility with both the public and DNER leadership.
IV-A-5-a	Puerto Rico CMP	JBNERR and the Puerto Rico Coastal Management Program demonstrate a high level of collaboration and regularly engage in mutually beneficial projects.
IV-A-5-b	Sea Grant	A Memorandum of Understanding (MOU) between DNER and Sea Grant has resulted in many cooperative efforts, such as outreach material design, editing, and printing
IV-A-6-a	2001 NERRS Annual Meeting	JBNERR hosted the 2001 NERRS annual meeting. The reserve coordinated all logistics as well as optional field trips held prior to the meeting.
IV-A-6-b	Coral Reef Initiative	The Reserve Manager represented Puerto Rico on the Coral Reef Initiative Task Force early in the evaluation period. Throughout the evaluation period, the Reserve Manager continued to support the development and implementation of the Puerto Rico Coral Reef Strategy and Action Plan.
IV-A-6-c	Bilingual Contributions	The reserve has made a great contribution to the national program through bilingual materials.

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IV-B-1	Ties with Universities	The reserve's research and monitoring program has strengthened its ties with universities.
IV-B-2	Funding Collaboration	JBNERR has pursued innovative funding approaches that best meet the unique needs of the reserve.
IV-B-3	R&M Program Visibility	The reserve's research and monitoring program has worked to increase program visibility and to recruit quality researchers to the reserve.
IV-B-4	SWMP	The reserve has institutionalized the System-wide Monitoring Program.
IV-B-5	GIS	The reserve is doing excellent Geographic Information System work.
IV-B-7	R&M Staff	The research and monitoring staff have done an excellent job stabilizing and advancing the reserve's research and monitoring program
IV-B-8	Site Profile	JBNERR has made good progress on its site profile.
IV-C-1	CDMWs	JBNERR has presented outstanding Coastal Decision-maker workshops to diverse audiences.
IV-C-2	Newsletter	The reserve produces both Spanish and English versions of its newsletter, "Bahia de Jobos," which is an excellent education and outreach tool.
IV-C-3	Information Center	The reserve maintains a valuable digital Information Center with 1,576 references catalogued under 2,570 topics.
IV-C-5	School Programs	JBNERR provides innovative programs for school children throughout the year.
IV-C-6	Volunteer Programs	The education program encourages individuals within the community to establish off-site volunteer projects that foster environmental awareness.
IV-C-7-a	Transferring Research	The research and monitoring program and education program work together to transfer valuable research results and information to the local community.

**APPENDIX F. SUMMARY TABLE OF PROGRAM SUGGESTIONS AND NECESSARY ACTIONS**

<b>Rec. #</b>	<b>PS/NA</b>	<b>Recommendation</b>
1	NA	Within six months of receipt of the final evaluation findings, DNER must fill the position of Education Coordinator with a competent, qualified individual. Progress on filling the Education Coordinator position shall be reported in JBNERR's operations awards semi-annual progress reports.
2	PS	NOAA encourages DNER to establish job descriptions and a recruitment process to address the unique staffing needs of the reserve. NOAA also encourages DNER to include the Reserve Manager in all final hiring decisions regarding reserve staff.
3	PS	NOAA encourages DNER to develop a small purchases capability, such as a Department credit card or petty cash fund, for JBNERR.
4	PS	NOAA encourages JBNERR to work with its advisory committees in order to assist their move into a more institutionalized stage of development, including: (1) formalization and empowerment of the committees; (2) integration of committee members' activities; and (3) development of the committees' capacity to advise the reserve as a group and to serve as an advocate for the reserve.
5	NA	Within six months of receipt of the final evaluation findings, DNER must submit to NOAA a Recovery Action Plan and timeline for addressing encroachment and illegal construction on reserve property and attendant resource degradation. The plan must include the elements described in these findings and identify specific actions with target dates. Progress on the implementation of the plan shall be reported in JBNERR's operations awards semi-annual progress reports.
6	NA	DNER must lead the effort to coordinate and complete the land transfer, design and construction of the filter strip, and mangrove restoration on the northern portion of the reserve in order to achieve a more sustainable ecological system. Within six months of receipt of the final evaluation findings, DNER must submit to NOAA an action plan and timeline for coordinating efforts with PRLA and other agencies as necessary to complete the Consent Order actions. The plan must identify specific actions with target dates that will advance the progress of the land transfer, design and construction of the filter strip, and mangrove restoration until completed. Progress on the implementation of the plan shall be reported in JBNERR's operations awards semi-annual progress reports.
7	PS	NOAA urges DNER to work with the reserve to evaluate existing development pressures in the Jobos Bay watershed and their effects (primary, secondary, and cumulative) on JBNERR. The results of the evaluation should be carefully considered in all future DNER decisions regarding development activities in the Jobos Bay watershed.



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8	NA	DNER must take steps either to reactivate the SPA planning process for the Jobos Bay watershed or to develop an alternative coordinated interagency decision-making process regarding development policy. Within six months of receipt of the final evaluation findings, DNER must notify NOAA in writing of the actions it plans to take to address the problem. Progress on the implementation of these actions shall be reported in JBNERR's operations awards semi-annual progress reports.
9	NA	DNER must develop a formal mechanism to forward permit applications for activities in the Jobos Bay watershed to the reserve for review and to incorporate reserve comments into the decision-making process. Within six months of receipt of the final evaluation findings, DNER must notify NOAA in writing of the mechanism it has established to address this issue. Progress on the implementation of this mechanism shall be reported in JBNERR's operations awards semi-annual progress reports.
10	NA	DNER must take action to provide an increased and regular Ranger Corps presence throughout the reserve as well as to ensure that back-up officers will be available when they are required. DNER also must provide necessary legal support to Ranger Corps enforcement actions in a timely manner to ensure that rangers feel empowered to engage in appropriate enforcement, particularly in cases of illegal fill and construction on reserve property. Within six months of receipt of the final evaluation findings, DNER must notify NOAA in writing of the actions it has taken to improve Ranger Corps staffing and effectiveness at JBNERR. Progress on the implementation of these actions shall be reported in JBNERR's operations awards semi-annual progress reports.
11	PS	NOAA encourages JBNERR to work with the Planning Board and the municipalities of Salinas and Guayama to ensure compatibility of the municipality plans with the reserve's revised management plan.
12	PS	NOAA urges JBNERR to continue to pursue boundary expansion through acquisition of the sectors identified in the reserve's FY 01 acquisition plan, especially the Puerto Rico Housing Department's 15-acre salt flat on the western boundary of the reserve, the mangrove area behind the Visitors' Center, and Cayos La Barca.